TITLE: THE PROVISION OF PATIENT PERSONAL HYGIENE IN THE INTENSIVE CARE UNIT: A DESCRIPTIVE EXPLORATORY STUDY OF BED-BATHING PRACTICE.

Abstract

Background/objectives:

The provision of the patient bed-bath is a fundamental nursing care activity yet few quantitative data and no qualitative data are available on registered nurses' (RNs) clinical practice in this domain in the intensive care unit (ICU). The aim of this study was to describe ICU RNs current practice with respect to the timing, frequency and duration of the patient bed-bath and the cleansing and emollient agents used.

Methods:

The study utilised a two-phase sequential explanatory mixed method design. Phase one used a questionnaire to survey RNs and phase two employed semi-structured focus group (FG) interviews with RNs. Data was collected over 28 days across four Australian metropolitan ICUs. Ethical approval was granted from the relevant hospital and university human research ethics committees. RNs were asked to complete a questionnaire following each episode of care (i.e. bed-bath) and then to attend one of three FG interviews: RNs with less than two years ICU experience; RNs with two to five years ICU experience; and RNs with greater than five years ICU experience.

Results:

During the 28-day study period the four ICUs had 77.25 beds open. In phase one a total of 539 questionnaires were returned, representing 30.5 % of episodes of patient bed-baths (based on 1767 bed occupancy and one bed-bath per patient per day). In 349 bed-bath episodes 54.7% patients were mechanically ventilated. The bed-bath was given between 0200-0600 hours in 161 episodes (30%), took 15-30 minutes to complete (n=195, 36.2%) and was completed within the last eight hours in 304 episodes (56.8%). Cleansing agents used were predominantly pH balanced soap or liquid soap and water (n=379, 71%) in comparison to chlorhexidine impregnated

sponges/cloths (n=86, 16.1%) or other agents such as pre-packaged wash cloths (n=65, 12.2%). In 347 episodes (64.4%) emollients were not applied after the bed-bath. In phase two 12 FGs were conducted (three FGs at each ICU) with a total of 42 RN participants. Thematic analysis of FG transcripts across the three levels of RN ICU experience highlighted a transition of patient hygiene practice philosophy from shades of grey – falling in line for inexperienced clinicians to experienced clinicians concrete beliefs about patient bed-bath needs.

Conclusions: This study identified variation in process and products used in patient hygiene practices in four ICUs. Further study to improve patient outcomes is required to determine the appropriate timing of patient hygiene activities and cleansing agents used to improve skin integrity.

Keywords

nursing care

patient hygiene

bed-bath

intensive or critical care

mixed methods design

Introduction

The bed-bath is generally performed to improve patient hygiene in the intensive care unit (ICU) and is associated with many benefits for patient comfort and health outcomes.[1] The effectiveness of the bed-bath in reducing infection is debatable, due to evidence demonstrating that this activity increases the dispersal of bacteria to surrounding skin and the environment.[2,3] However, many other clinical goals may be achieved simultaneously. These include inducing comfort, relaxation, reducing pyrexia, stimulating the circulation and providing a regular opportunity for skin integrity assessment.[4,5]

Background

Frequency and timing of the bed-bath

Prioritising hygiene in the face of a critically ill and unstable patient is a challenging clinical conundrum. In some instances, the maximisation of sleep, haemodynamic stability and good temperature regulation may have greater clinical importance.[1,6] The frequency of bathing is individualised and depends on personal preference and factors such as the patient's level of pyrexia, continence and stability.

Being sedated and mechanically ventilated, most ICU patients cannot voice their bathing needs. Consequently, such decision making depends on the sole judgment of the caring nurse. A patient bed-bath may be performed for the convenience of nursing routine or workload without questioning its relevancy and/or efficiency in meeting the patient's hygiene needs.[7] The provision of a daily bed-bath is an established acceptable practice in the ICU environment,[1] however bed-bathing timing variations can be observed from nurse to nurse and from health facility to health facility.

Two North American studies focused on the impact of nocturnal nursing care activities on patient's sleep and found the majority of bed-bath episodes occurred during the early hours of the morning. Celik et al.[6] reported that nursing activities (including mouth and eye care, pressure ulcer care, change of dressing, bed-bathing and catheter change) were more frequent during the hours of 24.00 and 05.00. In a retrospective study examining nocturnal care in the ICU, Tamburri et al.[7] found that 61% of patients were given a routine daily bed-bath between 0200 and 0500 hours.

Although there is minimal evidence to support the optimal timing for the patient bed-bath it is suggested that it be timed so as not to disrupt or negatively impact a patient's sleep.[7] However, due to its time and labour intensive nature, the availability and coordination of staff to assist in the procedure may have a significant impact on dictating both timing and frequency.[1]

Use of cleansing agents and emollients

Literature offers support for the use of disposable bed-baths over traditional basin bed-baths. Larson et al.[2] compared a traditional basin bed-bath with a pre-packaged disposable bath in an ICU to measure four outcomes: time and quality of bath; microbial counts on the skin; nurses' satisfaction; and costs. Nurses expressed a clear preference for the disposable bath and it was found that this bed-bath alternative took less time to prepare and to implement. Overall quality and costs (taking into account nursing time, supplies used and laundry costs) were similar for both alternatives. However, in the study costs were calculated on questionable assumptions derived from observed bath times that were shown not to be significant between the two groups. In addition, microbial counts using groin and umbilicus cultures were reported in Larson's study. Even though it was comparable, it was noted that there is less opportunity for recontamination of skin with the disposable bed-bath.[2] In addition, disposable bed-

baths eliminate the use of basin/water which has been identified as a significant potential source of waterborne infections.[8] Evidence demonstrates that basins are a reservoir for many bacteria and could transmit hospital-acquired infections especially in the case of immunocompromised and severely ill patients.[9]

Nurses' preference for a disposable bath was upheld in a systematic review by Hodgkinson et al.[10] examining topical skin care regimens for elderly people in aged care facilities. No strong evidence was found favouring a specific cleansing agent for bathing however the 'best' evidence available (despite small sample sizes and/or poor data reporting) reinforced the use of the bag bath to reduce the risk of dry skin[11] and preferential use of no-rinse cleansers over soap.

The Australia Wound Management Association (AWMA)[12] asserts that alkaline soaps should be avoided as they alter the acid mantle of the skin and may produce chemical or physical irritation. They can also affect the water-holding capacity of the skin hence interfering with bacterial resistance.[12] To counteract these issues, Burr and Penzer[13] suggest the substitution of soap for a non-soap product such as an aqueous cream that may be applied using a washcloth.

Other recent research suggests the use of chlorhexidine impregnated patient washcloths in ICU as a strategy to reduce pathogen transmission.[14-16] Three studies suggest that routine daily patient bed-bathing with chlorhexidine gluconate (CHG) as compared with traditional soap and water, reduces the incidence of methicillin-resistant *Staphyloccocus aureus* (MRSA)[16] and vancomycin-resistant *Enterococcus* (VRE)[14,15] among ICU patients. However, these studies were single centre trials and the generalisability of their findings is uncertain. Climo and colleagues[17] supported these findings in a multi-centre pre-test post-test interventional trial supporting that daily

bathing with a CHG solution may reduce the acquisition of MRSA and VRE among ICU patients. In the Climo et al. study MRSA acquisition decreased in the intervention period by 32% (5.04 vs. 3.44 cases per 1000 eligible patient days) and VRE decreased by 50% (4.35 vs. 2.19 cases per 1000 eligible patient days) compared to the baseline data.[17]

There is concern however about potential hypersensitivity reactions in patients who are bathed using CHG based products[18] although this was not found in the studies noted above[14-17] where manufacturer's guidelines were adhered to and CHG contact was avoided with the patient's face, mucous membranes and wounds. Also concern may be raised about potential CHG resistance with repeated use for the ICU daily patient bed-bath. Only one study examined this issue and reported no evidence of developing chlorhexidine resistance among VRE isolates.[15]

For patients with dry or flaky skin, use of a topical moisturiser is supported to maintain skin integrity and its barrier function.[12,19] Burr and Penzer[13] recommended that post bed-bath nursing care include the daily use of topical emollients. A recent study examining pressure ulcer prevention practices within the ICU indicated that moisturising products were infrequently used for patients with dry skin.[20] However, the authors identified that this finding was possibly due in part to lack of product availability (moisturising agents) in the study setting.

Few quantitative data and no qualitative data are available on registered nurses' (RNs) clinical practice in relation to the timing, frequency, duration and choice of cleansing agents and emollients for the patient bed-bath in the ICU. This research study will provide an understanding of this unexplored yet fundamental element of RNs' practice in maintaining hygiene needs of critically ill patients. The study will also serve to inform

a more comprehensive research aproach to define patient hygiene best practice within the intensive care environment.

Research aims and questions

This study aimed to first, describe RNs' current practice of patient personal hygiene measures in the ICU and second, to explore and generate themes about RNs' perspectives of bed-bathing practice. For the purpose of this study the hygiene practice of the bed-bath is defined as an episode of nursing care where the patient's skin requires cleansing and patient comfort is provided. This included a complete bed-bath given to a totally dependent patient in bed or a partial bed-bath where cleansing is directed to those parts of the patient's body that would be uncomfortable if left unbathed, such as the back and perineal area if the patient was diaphoretic or incontinent.

For phase one the research questions that guided this study were:

1. What is the frequency of the patient bed-bath in the ICU?
2. What time(s) are patients given a bed-bath in the ICU?
3. What is the length of time of the patient's bed-bath?
4. What cleansing agents are used for the patient bed-bath?
5. What factors (patient's illness, organisational) can impact on the patient bed-bath in the ICU?

The research questions which guided phase two were "How do RNs describe their bed-bathing practice?" and "How do RNs describe the factors that impact on this practice and the factors that impact on bed-bathing practice"?

Research design

The study utilised a two-phase sequential explanatory mixed method design.[21] Mixed methods design is an approach to inquiry that either combines or associates both quantitative and qualitative strategies so that the overall strength of the study is greater than its individual parts.[22] Bed-bathing is an under reported phenomena of intensive care nursing practice. This study therefore used a two-phase sequential explanatory mixed method design to firstly describe the phenomena of bed-bathing in ICU and secondly to expand this understanding though a series of group interviews with RNs of different levels of experience. In this study phase one was a quantitative descriptive survey to explore the frequency, timing, duration and cleansing agents used in the patient bed-bath. Phase two used semi-structured focus group interviews to better understand RNs' approach to the bed-bath and factors that can impact on the patient bed-bath in the ICU. Focus groups (FG) were chosen to solicit a rich, thick and in-depth perspectives, views and opinions on the phenomena.[23] The study sought to determine a broad and deep understanding of RNs' bed-bathing practice and the FG method is acknowledged as effective for eliciting such an understanding as the emphasis is on listening to participants' opinion and insights. As participants hear and interact with each other different data is yielded than if participants were interviewed individually.[23]

Setting

The research setting for this study was four Australian metropolitan public hospital intensive care units. Three ICUs were Level III tertiary referral intensive care facilities and one ICU was a Level II facility.[24] The bed capacity of the four ICUs ranged from 16 to 36 beds. The four research sites have a varied case mix which covered a number of clinical specialities such as surgery, medicine, trauma and oncology however each of the research sites were specialists in one clinical area: spinal; burns, cardiac and obstetrics.

Participants

During the study period, the four ICU's full time RN staffing equivalents (FTE) ranged from 42 to 178 FTE. All RNs working either full time, part time or casually in the ICUs at the time of data collection were included in the study.

Ethical considerations

Ethical approval was granted by the human research ethics committees of the four participating hospitals and the university. Ethical considerations specific to this project included consent, confidentiality and anonymity. Across the four research sites, potential participants were informed about the study through the distribution of an information sheet and invitation to participate in the study. In phase one participant consent was deemed by return of the questionnaire. For phase two, the FG interview, participants signed a consent form prior to commencement of the interview. Questionnaires maintained participant anonymity by not requesting the hospital, participant or patient name or contact details. Participants were de-identified in all focus group interviews transcripts.

Instrument

Phase one used a questionnaire to survey RNs. The questionnaire was developed for this study by the authors with reference to existing literature and their clinical experience. The questionnaire contained 15 items, with 14 items using categorical scales. Six items related to demographic information regarding the RN's experience, critical care qualification and the patient's reason for and length of admission to ICU, whether the patient was mechanically ventilated and the time of the most recent documented previous bed-bath. The following eight factual items addressed the current episode of care (bed-bath): the time the bed-bath was performed; the duration

of the bed-bath; whether it was a complete bed-bath or a position change; interruptions to the bed-bath; clinical reason for the bed-bath; cleansing agents used; and the application of a moisturising lotion. The final item was an open question allowing for the RN to provide comments on the bed-bath just performed.

The survey instrument was tested for content validity.[21, 22] A pilot test was undertaken with three participants to improve the questions, format and scales.[21] Two participants were senior intensive care clinical RNs with over 15 years experience and held Masters of Nursing qualifications. One participant was an academic working towards a higher research degree and with over 20 years intensive care nursing experience. On the basis of their feedback minor revisions were made to the scales for items addressing timing of the bed-bath and the inclusion of liquid soap in the item about cleansing agents.

Phase two used the data from phase one to generate focus group questions.[21] The FG questions provided set focus on the topic and the list of prompting questions allowed for the FG facilitator to tease out diverse meaning and understandings of participant's clinical bed-bathing practice (see Table 1).

Procedure

All RNs working in the ICUs were sent a letter outlining the study. In phase one RNs were asked to complete a questionnaire following each episode of care (i.e. bed-bath). Completed questionnaires were placed in a locked drop-in box located in the central station of each unit. The data collection period was 28 days in each ICU research site from December 2008 to February 2009.

In phase two all RNs working in the ICUs were again sent a letter outlining the study and an invitation to attend one of three focus group interviews: RNs with less than two years intensive care experience; RNs with two to five years intensive care experience; and RNs with greater than five years intensive care experience. Focus groups discussion can potentially be highly influenced by who is involved.[23] Participants need to feel comfortable to share their views by meeting with others possessing similar characteristics or experiences. Participants were stratified according to intensive care experience to allow less experienced RNs opportunity to voice their opinions and views in a forum of their peers. Focus group interviews were undertaken by two moderators. The first author who has previous experience in FG interviews and methods facilitated the FG interviews. The first author has intensive care nursing experience and is not employed at any of the research sites. The third author, who was also not employed at the research sites, acted as second moderator and took field notes during the interviews. Focus group interviews were approximately 30 minutes in duration and were guided by an interview schedule addressing the study's research questions (see Table 1). The focus group interviews were conducted in a quiet meeting room in each ICU during the mid afternoon period. Interviews were transcribed "real time" as voice to text during the interview using a registered professional court reporter.

Data analysis

Phase one data was entered in the Statistical Package for Social Sciences (SPSS Version 16). Demographic and other data was analysed using descriptive statistics and chi-square analysis to determine differences between groups (i.e. participating research sites). Initial quantitative results were used to inform the interview schedule for phase two.

For phase two transcripts from focus group interviews were analysed using thematic coding and categorising.[25] Thematic coding and categorising is a fundamental analytical process where passages of text are identified that exemplify an idea. A code, or shorthand reference note or label, is then applied to the idea. This process was followed for this study and then similarly coded text was then grouped together, compared, reduced where appropriated, linked to other concepts and analysed by the authors. Thematic categories were then applied to grouped codes which represented a recurring issue.[25] This was a process of intensive reiteration between authors until consensus was reached.

Results

During the 28-day study period the four ICUs had a total of 77.25 beds open. Table 2 presents data from the ICUs over the study period.

Phase one

A total of 539 questionnaires were returned, representing 30.5 % of episodes of patient bed-baths (based on 1767 bed occupancy and one bed-bath per patient per day). In the 539 questionnaires returned, 54.2% of RN respondents (n=292) had less than five years intensive care nursing experience and 60.1% (n=324) had not completed a post registration or postgraduate critical care nursing qualification. However, it is acknowledged that an individual RN may have completed the questionnaire multiple times, as the survey was requested to be completed after each patient bed-bath.

In 349 bed-bath episodes (64.7%) patients were mechanically ventilated. The majority of patients (n=304, 56.8%) had received a bed-bath within the previous eight hours. A routine bed-bath was given between 0200-0600 hours in 30% of episodes (n=161) (see Figure 1). A statistically significant difference was found in the time the bed-bath was

performed across the four ICUs ($\chi^2_{(9)}$=54.9, p=0.000) (see Figure 2). The routine daily wash was clinical reason for the majority of bed-bath episodes (n=202, 37.5%) however, 119 bed-bath episodes (22.1%) were performed because of incontinence, 76 were performed as a "freshen-up" (14.1%) and 39 were performed because the patient was diaphoretic (7.2%). The majority of bed-baths, 77.4%, included a sheet and position change (n=417). One hundred and ninety five bed-bath episodes (36.2%) took between 15 and 30 minutes to complete.

Cleansing agents used were predominantly soap or liquid soap and water (n=379, 71%) in comparison to chlorhexidine impregnated sponges/cloths (n=86, 16.1%) or other agents such as pre-packaged wash cloths (n=65, 12.2%) (see Figure 3). For 12% of patient bed-bath episodes (n=66) the patient's own personal toiletries were used for their hygiene needs. In 64.4% of bed-bath episodes (n=347) emollients were not applied after the bed-bath. For 76.7% (n=148) of episodes where emollients were applied after the bed-bath the product supplied by the hospital was used.

Phase two

Twelve FGs were conducted (three FGs at each ICU) with a total of 42 RN participants. Table 3 presents the demographic characteristics of the focus group participants. The majority of participants were female (80.9%, n=34) and 59.5% (n=25) of participants had completed either a hospital based critical care qualification or tertiary critical care postgraduate study.

Focus group question three related to the frequency of the bed-bath. The majority of participants (88%, n=37) identified that patients were routinely bed-bathed in their unit once per day but would often have a second wash or a "couple of freshen-ups". This

was despite an accepted unwritten practice across all four ICUs of only one bed-bath per day. Some participants shared that they preferred to wash their patient once per shift (12 or 8 hour) to ensure they were "handing over a clean patient". Question four related to the timing of the bed-bath. Here participants identified with the practice norm of their workplace reporting either that the bed-bath was undertaken in the early hours of the morning (research site B) or the late afternoon (research site D) or evening (research site A and C).

Analysis of FG transcripts across the three categories of RN ICU experience identified two thematic categories: *shades of grey (falling in line)* and *concrete beliefs.* The themes highlighted a transition in practice. For inexperienced clinicians identified that their practice was based local, context driven patient hygiene practices which focused on nursing goals of patient cleanliness, hygiene and infection control. In contrast, experienced clinicians' demonstrated firmly established personal beliefs and care practices about individualising the patient bed-bath to achieve patient cleanliness and comfort.

Category 1: Shades of grey – falling in line

Participants in this study identified the importance of the bed-bath to achieve cleanliness. Participants' nursing goals centred on the process of the bed-bath and "*falling in line*" with the established routine of the ICU highlighting that their clinical decision making about the patient bed-bath was influenced by routine of their place of work and possibly their experience. Vignettes from this thematic category came from participants with less than 5 years intensive care nursing experience.

> *"I find it interesting that we do wash people at that time of the morning (*3-6am*), given that is your best rest period, your REM sleep. It seems to go against all the research there is. I've come from different clinical areas and have nursed*

quite a while before coming to ICU. It seems to be very institutionalised here and maybe across all ICUs but I do what they do to fit in." (Participant 32, FG 10)

Participants identified that they valued their nursing practice of hygiene care and had defined and valued goals they wanted to achieve in the episode of patient care. The concept of presentation was identified as a goal with some participants identifying their belief that if the patient was presented "tidily" following a bed-bath this created a perception of calm in a stressful environment for the visiting relative.

"*It is just cleanliness* (nursing goal)*, I think, and the presentation of the patient". (*Participant 40, FG11).

"One of my goals would be patient assessment, skin assessment. Oh and looking good. You know neat and tidy." (Participant P9, FG 2)

"I think it is a psychological thing (a nursing goal) *as well, a calming kind of thing, to feel fresh and to have straight sheets at the end*." (Participant 23, FG 6)

Participants also vocalised their preference for particular cleansing agents but showed variation in their likes and dislikes. A small number of participants spoke about asking the family to bring in the patient's personal hygiene products to "personalise" their patient care.

"I don't like using the packaged cloths as I am a splasher. I like splashing the water around and getting my patient really wet, so they feel clean." (Participant 14, FG 6)

Category 2: Concrete beliefs

Participants in this category highlighted and reaffirmed their beliefs that the fundamental goals of the bed-bath were to provide individual patient comfort and care so that the patient looked more "*like themselves*". The concept of idiosyncratic practice was identified with participants richly describing their particular likes, dislikes, foibles and habits when performing a bed-bath.

> (My goal).*"Yeah, you know..make the patient look and feel like someone is caring for them. Treat the patient as if they are your relative and this is how you would like your relative presented to you. Not only if someone is coming in to visit them but if this is you coming into the bed and this is the end result of what you would like to feel like."* (Participant 33, FG 12)
>
> *"I like to do start the wash at the top. You keep the whole bottom nicely covered with blankets, keep them warm. I don't like to see the whole body stripped. Try and keep them warm. I am very much into their mouth care and shave. It is so important, making sure their TDS and SKDS come off. That is not properly washing them if they are left on."* (Participant 5, FG4)

Some participants in this group firmly believed that the patient bed-bath, by necessity, must fit in with the nursing workload and clustering of care activities. This was shown to be a key factor which impacted on timing and frequency of the patient-bed-bath.

> "*We wash our sedated, ventilated patients at 4am because it tends to be the quietest time….we have other tasks to do later in the morning…we do it (*the bed-bath*) all in one big hit and we are finished by about 5 or 5:30am. Then we don't have to disturb the patient….we cluster activities at that time."* (Participant 40, FG 12)

Other participants felt equally as strongly that the routine daily bed-bath should be performed in the late afternoon or early evening.

"That went out a long time ago (the bed-bath at 3-6am). If people are asleep, we leave them asleep. We do a freshen-up, top and tail wash at 6am." (Participant 4, FG 1)

Participants with more experience (i.e. RNs with greater than five years intensive care experience) believed that the provision of the patient bed-bath is an advanced practice skill. However, participants felt that general understanding of the complexity of patient hygiene measures was not always shared by their junior nursing colleagues in intensive care. As a result, participants perceived that junior RNs may omit fundamental aspects of patient hygiene measures because they are prioritising other aspects of patient care.

"I think patient hygiene is very underestimated…how important it is as part of your nursing assessment, to spend that time with them (the patient)*, involve the family, if you think it's appropriate, and they can see how you are caring for their relative." (Participant 18, FG 7)*

"The basic nursing care, it doesn't get the high priority now that it should. I think there is a basic lack of understanding of how important patient hygiene is." (Participant 17, FG 7)

Participants also identified a number of factors which they felt impacted on the patient bed-bath. These were grouped into *organisational factors* such as: routine practice; timing; workload; the necessity for other procedures/investigations for the patient; level of experience of staff; the RN's personal practice preference; and product availability and *patient factors* such as: incontinence; diaphoresis; post procedure/post surgery; freshen-up and the patient's family wishes.

Discussion

This study used a sequential mixed methods design where the findings of one method (phase one descriptive survey) not only informed the second method but were elaborated on and expanded in the second method (phase two focus group interviews).[21,22] This was helpful in this study as the collection of diverse types of data provided an understanding and fuller description of the research phenomenon. The use of both open and closed questions in the phase two FG interviews presented a verbal literary picture of the survey data collected in phase one thus providing convergence and triangulation of data.

In this study phase one and phase two results highlighted that critically ill patients were washed at least twice a day and often more frequently because of diaphoresis or incontinence. This study also highlighted significant practice variation between the fours ICUs regarding the timing of the patient bed-bath. There is still minimal evidence to support the optimal timing for the bed-bath and participants in this study demonstrated no consensus with the concept that the bed-bath be timed so as not to disrupt or negatively impact a patient's sleep. In this study routine bed-bathing performed from 0200-0600 was prevalent or "freshen-up" washes were given at 0600. This is congruent with previous findings by Celik et al. and Tamburri et al.[6,7] We found that experienced RNs had firmly established beliefs about the timing of the patient bed-bath. Thematic categories from FG analysis in this study highlight that RN's with less than 5 years experience fell into line with the practice of their workplace and RN's with greater than 5 years experience upheld the practice of their workplace. Also participants' beliefs about best practice were polarised depending on whether their workplace routinely washed the patient at 0200-0600 or 1400-2000. These participants supported their local practice of bed-bathing the patient between 0200-0600 citing workload and organisational factors to support this timing. Less experienced RNs

followed the routine of care in their ICU but highlighted that they felt this may or may not be patient-centred care. Notwithstanding this their clinical practice was congruent with the practice of their workplace. This is supported by data from research site B (see Figure 2) where the patient bed-bathing is routinely performed between 0200-0600. Research site B was the largest ICU involved in this study and participants from this site clearly supported their workplace practice citing workload in a large facility as the key reason for the timing of the patient bed-bath.

Due to the labour intensive nature of the ICU patient bed-bath, co-ordination of staff to assist with equipment holding for patient safety (e.g. the endotracheal tube, central venous line etc) and physically turning the patient has a significant impact on dictating both timing and frequency of the procedure. In two of the ICUs in this study more patient care assistants (non nursing staff to assist with physically turning the patient) were allocated to the late afternoon/early evening time period to assist with the patient routine bed-bath. However, in the other two ICUs the workflow demands of a morning with medical rounds, physiotherapy, radiology and other procedures and treatments necessitated the patient bed-bath be performed earlier (ie 0200-0600). Participants in these units identified that there insufficient patient care assistants to assist with the bed-bath in the late afternoon or early evening.

What cleansing agents are used for the patient bed-bath?

The majority of patient bed-baths in this study were performed with soap or liquid soap and a basin of water despite disposable pre-packaged wash cloths being available in three research sites. Recent evidence demonstrates that basins are a reservoir for many bacteria and could transmit hospital-acquired infections especially in the case of

immunocompromised and severely ill patients.[9] There is a need for further research on the efficacy of disposable bed-bath products such as pre-packaged cloths.[5]

Although recent evidence supports that chlorhexidine impregnated cloths reduce pathogen transmission[14-17], in this study focus group data highlighted that routinely used chlorhexidine impregnated wash cloths was used in one ICU only. Interestingly, rates of hospital acquired infections such as MRSA and VRE across the four ICUs in this study were low perhaps highlighting important differences between models of care between European, North American and Australian ICUs and the impact of these on patient outcomes. Changing practice to a routine patient bed-bath with CHG impregnated cloths on the basis of international research findings requires careful consideration and may have no discernable improvement to patient outcomes.

Phase two FG results in our study highlighted that RNs varied in their beliefs about their choice and subsequent use of cleansing products. This was based on RN strong individual preference. It was identified that the use of the patient's own bath products was a common practice. This result is not previously reported in the literature.

It has been suggested that caution is recommended with the use of alkaline soaps.[10,12] In this study 22.2% of patients (n=119) were bed-bathed because of incontinence and in 71% of bed-bath episodes pH balanced soap or liquid soap and water was used as the cleansing agent. The avoidance of soaps for cleansing incontinence-associated dermatitis is fundamental and the use of soap substitutes and emollients is recommended to restore the natural barrier function of the skin.[13] Thus findings in this study were not congruent with evidence-based practice.

This study is consistent with previous research, which found that emollients were infrequently used post bed-bath for ICU patients[20] with no formal patient skin assessment used or documented. In this study, skin integrity was only documented as either intact or not intact. Clinical practice guidelines recommend that formal skin assessment be performed regularly and documented in the patient's medical record.[12,19] For patients with dry skin the use of an emollient is also recommended.[12,19] Given the critically ill patient is most vulnerable for problems with disruption to skin integrity (e.g. pressure ulcer development or incontinence associated dermatitis)[26] this finding is of concern.

Moving Towards Interventional Patient Hygiene

In an effort to drive critical care nursing towards a renewed focus on identifying, implementing and maintaining quality patient hygiene measures, Vollman et al.[5] developed the "*interventional patient hygiene*" conceptual framework. Interventional patient hygiene is defined as a nursing action plan that is focussed on fortifying a patient's host defences using evidence based care including oral hygiene, skin cleansing and incontinence management[5]. The interventional patient hygiene model targets evidence-based practice interventions for critically ill patients to drive nurses' accountability for fundamental patient care activities. Such practice interventions are a prime opportunity to demonstrate the impact of nursing care on improving patient outcomes or nurse-sensitive patient outcomes. Vollman and colleagues[5] argue that the principles of quality patient care through the maintenance of quality patient hygiene initiatives is not new it has simply been overshadowed by technology and cost containment measures. Given the findings from this study, it is timely to reconceptualise patient hygiene measure in terms of nursing interventions to improve patient outcomes.

Limitations

There are acknowledged limitations with this research. This study's mixed methods design was chosen to form an understanding about the characteristics of RNs practice of patient hygiene activities as there is a dearth of literature on this phenomenon. However, as such the findings are limited to the research sites and not generalisable. For phase one a sample size calculation was not undertaken as this study aimed to describe a snapshot of practice over a 28-day period of bed-bath activity. This may have led to bias. Another possible limitation was the length of time allocated data collection for the phase one survey period. The 28 day period when RNs were asked to complete a questionnaire for every episode of patient hygiene (bed-bath) they performed was selected to provide a comprehensive snapshot of practice. The survey was completed on every bed-bath episode therefore individual RNs may have completed the survey multiple times resulting in bias in description of bed-bathing practice. Response rates were low perhaps reflecting the repetitive nature of questionnaire completion and leading to a sampling error. It is also acknowledged that data was not collected on the number of staff required to be mobilised for the bed-bath procedure or the bed-bathing requirements of specific patient populations such as bariatric patients. Although the FG practically divided RN's into three groups on the basis of experience, it is acknowledged that the process of self selection, whereby RNs volunteered to participate, may have biased FG interviews and consequently data generated.

Conclusion and recommendations

This study has implications for nursing research and clinical practice. Further research is warranted to determine the appropriate timing of patient hygiene activities and cleansing agents used, to improve patient outcomes. Prospective studies to address

the issue of the timing of the bed-bath or freshen-up on sleep disturbance should be considered. Other organisational and patient factors which impact on the timing, frequency of the bed-bath also need further study. Implications for clinical practice arising from this study include: educational activities to address RNs' clinical decision making with regarding to timing; frequency and cleansing agent choice for the bed-bath; the development of a protocol for skin assessment, documentation; and management strategies to improve patient skin integrity is recommended.

This study has described a previously unreported domain of clinical practice; RNs patient bed-bath practice in the ICU. We have identified differences in process and products used in patient hygiene practices in four ICUs highlighting that practice was varied, relied on custom or firmly held individual beliefs and on the whole was not evidence based. Intensive care nurses are in an optimum position to influence change and to promote evidence-based care for the promotion of healthy skin integrity in the critically ill patient, thus reclaiming ownership of core nursing care.

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